advice to DNR and other regarding appropriate remedial actions to reduce, control, or eliminate health hazards. In addition, DHSS is responsible for evaluating the human toxicity and assessing the risk to people from exposure(s) to all types of hazardous substances in the environment. The evaluation process may include conducting epidemiological studies to identify trends in diseases related to hazardous substance exposure.

Section 192.011, RSMo requires DHSS to monitor adverse health effects of the environment and prepare population risk assessments regarding environmental hazards including, but not limited to, those relating to air, water, soil, toxic waste, solid waste, sewage disposal, and others. DHSS is to make recommendations to DNR for improvement of public health as related to the environment.

Per 10 CSR 25-7.264(2)(P) of the Code of State Regulations, DHSS is responsible for the technical review and approval of all health profiles prepared as part of a hazardous waste treatment or disposal facility permit application to DNR. DNR should consult with DHSS regarding appropriate information to be included in a health profile, and to determine when additional epidemiological investigations might be warranted or required.

2. DNR

The DNR HWP is responsible for the supervision and enforcement of the Missouri Hazardous Waste Management Law, Sections 260.350 – 260.482, RSMo, as well as the laws found at Sections 260.566 – 260.575, RSMo (BVCP), Sections 260.900 – 260.960, RSMo (dry cleaners), and Sections 319.100 – 319.137, RSMo (petroleum storage tanks). This includes all related standards and rules and the terms and conditions of orders, permits, and licenses adopted or issued thereunder for active and closed Resource Conservation and Recovery Act (RCRA) hazardous waste management and disposal facilities; Brownfield Voluntary Cleanup Program sites; petroleum underground and above ground storage tanks; Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites; and federal facilities. In addition, the HWP is responsible for the investigation of abandoned and uncontrolled hazardous waste sites, maintenance of a registry of confirmed abandoned and uncontrolled hazardous waste sites ("the Registry"), and the preparation of an annual report of sites on the Registry.

DNR's ESP-EER is responsible for ensuring the protection of public health and the environment from hazardous substance emergencies in accordance with Sections 260.500 – 260.550, RSMo.

C. Roles and Responsibilities

1. DHSS

a. In general, DHSS is responsible for risk assessment, which is the process used to quantitatively or qualitatively estimate and characterize the probability of adverse effects occurring as a result of physical, chemical, radiological, or biological contamination.

b. DHSS will maintain expertise in the areas of risk assessment, radiation assessment, site characterization related to exposure pathway identification, toxicology, and other areas applicable to environmental public health.

c. DHSS-BEE will provide health assessments to DNR-HWP for each site included on the Registry. These Registry health assessments will be reviewed at least annually and updated as warranted.

d. In addition, DNR-HWP may request DHSS-BEE to provide health assessments at other sites, review analytical sample results, or evaluate environmental issues that are under DNR-HWP purview. Assessments provided by DHSS-BEE may take the form of quantitative risk assessments, semi-quantitative or qualitative public health assessments or health consultations, or other public health technical assistance. The type of health assessment will be determined on a case-by-case basis in consideration of factors such as schedule, complexity, the potential for public exposure to hazardous substances, and other factors.

e. Whenever appropriate, DHSS will cooperate with ESP-EER to conduct health assessments for sites where ESP-EER takes action to abate a hazardous substance emergency or to cleanup a hazardous substance release.

f. DHSS will collect drinking water samples from private wells to assess for exposure to hazardous substances. Sample analysis may include bacteriological, chemical, or radiological contaminants. Occasionally, DHSS may collect and test tap water at residences or businesses connected to public water supplies in order to assess exposure to substances that may occur within the water distribution system. DHSS will provide drinking water sample results to DNR-HWP as appropriate for further investigation into of a known or potential environmental source of water contamination.

g. Upon the request of the DNR-HWP, DHSS-BEE may schedule routine private drinking water well sampling from areas at or near known hazardous substances sites to monitor for changes in human exposure potential or migration of contaminants. The number of samples, monitoring period, and costs related to such activities will be determined cooperatively by DHSS-BEE and the appropriate DNR-HWP staff. Sample results will be provided to the private individual and to DNR-HWP.

h. DHSS will consult with and advise the DNR-HWP and hazardous waste permit applicants regarding the health profile component of the permit application. DHSS will assist applicants with obtaining data in DHSS possession that might be relevant to development of a health profile. DHSS may charge the applicant for this assistance and data. DHSS is responsible for reviewing and approving each health profile submitted as part of a permit application. As warranted, DHSS will assist the DNR-HWP with revising the health profile rules.

i. When DHSS-BEE plans environmental public health activities at or in the vicinity of a site known to them as being addressed by DNR-HWP, DHSS-BEE will notify the appropriate DNR-HWP personnel prior to the site visit. When necessary, DHSS-BEE may request the site visit be maintained confidential. If DHSS-BEE discovers during or after the site visit that they are or were working on a site that is, or is very near, a site being addressed by DNR-HWP, DHSS-BEE will notify the appropriate DNR personnel as soon as practical.

2. DNR

a. In general, DNR is responsible for risk management, which is the weighing and selecting of options and the implementation of controls to assure an appropriate level of protection to human health and the environment from physical, chemical, radiological, or biological contaminants. Risk assessment is one of many tools used in the risk management process.

b. DNR ESP-EER will respond to hazardous substance emergencies and/or direct other entities in responding to such emergencies in order to protect human health and the environment. DNR will consult with DHSS regarding such emergencies as warranted.

c. DNR-HWP shall provide oversight of investigations and risk management at sites under its authority. Such management shall be for the purposes of ensuring adequate human health and environmental protection and for compliance with all applicable laws and rules. DNR's management activities shall include, but not necessarily be limited to, the review of plans, reports, and other documents; conducting site visits, site inspections, site investigations, and sampling events; consulting with site owners; and other activities necessary to ensure actions at a hazardous substance site are appropriate, accurate, and protective. Oversight or development of risk assessment at sites will be provided by DHSS, or cooperatively by DNR and DHSS under their respective independent authority.

d. DNR staff shall regularly evaluate sites for placement on the Registry, conduct annual reviews of all sites on the Registry, provide oversight of entities that wish to cleanup Registry sites, produce an annual Registry report, and conduct all other activities required to ensure Registry sites do not pose unacceptable risk to human health or the environment. DNR will provide information on Registry sites to DHSS so that DHSS can assess human health risks associated with the sites. In

addition, DNR will include DHSS as a voting member of the Hazardous Waste Registry Site Assessment Committee.

e. DNR shall process and otherwise evaluate all applications for hazardous waste treatment, storage, and disposal facilities and provide ongoing oversight of hazardous waste management activities, including the investigation and remediation of hazardous waste releases to the environment, at all permitted facilities.

f. DNR shall work to ensure businesses, industry, and the general public comply with laws and rules pertaining to hazardous waste, polychlorinated biphenyls (PCBs), and petroleum storage tanks.

g. DNR will provide oversight and review of investigations, assessments, and remediation of hazardous substances at federal facilities in Missouri.

h. DNR will conduct and oversee the investigation and cleanup of contamination subject to the federal CERCLA and associated state laws and rules. In this capacity, DNR will cooperate with the federal Environmental Protection Agency (EPA), DHSS, and other federal, state, and local entities as well as private parties in the investigation, assessment, and remediation of contaminated property.

i. DNR will conduct and oversee investigations, assessments, and corrective action at petroleum storage tank release sites. In this capacity, DNR will work with tank owners and operators and other responsible parties, the Petroleum Storage Tank Insurance Fund, the Missouri Department of Agriculture, EPA, DHSS, and other parties to ensure contamination resulting from the operation of petroleum storage tanks does not pose unacceptable risk to human health or the environment. In accordance with section D.2.b of this section, oversight of risk assessment at sites will be provided by DNR, in cooperation with DHSS, under the independent authority of each agency.

j. DNR will conduct and/or oversee risk-based investigations, site assessments, and cleanups at sites eligible for participation in the Brownfield Voluntary Cleanup Program. In this capacity, DNR will work with participating parties and local, state, and federal entities, including DHSS, as well as other parties to ensure the property is safe for its intended use and the environment. In accordance with section D.2.b of this section, oversight of risk assessment at BVCP sites will be provided by DNR, in cooperation with DHSS, under the independent authority of each agency.

k. DNR will work with the public; business and industry; local, state, and federal elected officials; and other local, state, and federal governmental entities to develop laws, rules, and guidance to ensure hazardous wastes are appropriately managed and disposed of and to investigate, assess, and remediate releases of

hazardous substances to ensure human health and the environment are adequately protected from risks posed by such substances.

D. Cooperative Activities

1. DHSS

a. DHSS may conduct site visits for the purposes of gathering information to develop Registry health assessments for provision to DNR. When DHSS determines a field visit is warranted, DHSS will work with the appropriate DNR personnel to arrange for the visit. DNR will cooperate with DHSS in this regard and, when necessary or advantageous, DNR staff will accompany DHSS staff during the visit.

2. DNR

a. **Information to be provided by DNR to DHSS:** For actual and potential Registry sites, the HWP will provide DHSS with copies of off-site identification forms; preliminary risk assessments; site inspection reports; Hazard Ranking System evaluations, including worksheets; and all Registry updates. DNR will provide site updates and inspection reports to DHSS at least 90 calendar days before annual Registry health assessments are due to DNR.

When DHSS has notified DNR of the discovery of contamination in a private well or public water system as per section C.1.f. above, DNR will inform DHSS of the results of DNR's follow-up investigation(s) and other actions related to the contamination in a timely manner.

b. **Requests for DHSS assistance:** DNR requests to DHSS shall include reference to this MOU and the Cooperative Agreement. Requests will generally be made by one of the following DNR-HWP sections: Brownfield Voluntary Cleanup Program, Tanks Section, Permits Section, Federal Facilities Section, or Superfund Section.

DNR will request that DHSS review the quality and quantity of health-related information within certain documents, such as site investigation reports and sampling reports. In addition, DNR will request that DHSS review site-specific Tier 3 risk assessment proposals and reports developed in accordance with the Missouri Risk-Based Corrective Action guidance and rule or the Missouri Risk-Based Process for Petroleum Storage Tanks guidance.

DNR may request that DHSS provide testimony before the Hazardous Waste Management Commission (HWMC) during public meetings and hearings

concerning the health effects of hazardous substances at uncontrolled hazardous waste sites, permitted hazardous waste sites, and tank sites. In addition, DNR may request that DHSS provide testimony before the HWMC at public hearings pertaining to proposed DNR rules.

DNR will effectively involve DHSS in risk assessment activities with regard to guidance and policy review and development, in particular with respect to DNR's Risk-Based Corrective Action processes. Risk assessment activities include such things as:

- Review and updating of Risk-Based Corrective Action Technical Guidances – particularly updates or changes of toxicity factors, default exposure factors and calculations, default target levels (DTLs) and Tier 1 risk-based target levels (RBTLs).

- Review of site-specific risk assessments and related decisions, such as risk assessment work plans, site-specific RBTLs, calculations of representative concentrations, use of any non-MCL domestic use of groundwater screening values, target organ Hazard Index calculations, and exposure scenarios not addressed specifically by DNR guidance (i.e. recreational, swimming (dermal contact with surface water)).

- Review of certain risk management plans and Activity Use Limitations, such that acceptable risk levels are not exceeded in the future.

DNR will consider DHSS's comments and, as appropriate and feasible, incorporate the comments into the RBCA decisions, guidance or rules.

On an as-needed basis, DNR will make requests of DHSS for other health-related information or assistance.

DNR requests requiring a written response from DHSS shall include a reasonable time for completion, generally 30 calendar days from receipt of the request by DHSS. If DHSS requires additional time, DHSS will contact the appropriate DNR personnel to explain the situation and the additional time required.

When DNR requests DHSS review of documents or data developed using a specific computer model or other software, DNR will provide DHSS with the appropriate software, documentation, spreadsheets with formulas, and other information, as needed, relevant to the DNR request. DNR may request that DHSS review the models, spreadsheets, and other information to determine

whether they are appropriate in light of site conditions and, if so, whether the models were applied appropriately and accurately.

c. **ESP-EER Report:** DNR will routinely provide Hazardous Substance Emergency Events Surveillance reports to DHSS.

3. **DNR and DHSS**

a. DNR and DHSS agree to inform the other as soon as practical regarding independent decisions made or actions taken that may reasonably be expected to affect the work of the other.

b. DHSS and DNR agree to cooperate in the preparation and issuance of administrative orders or in pursuit of other actions to help abate public health emergencies associated with hazardous substance emergencies.

c. Should either agency desire the attendance of the other at a public meeting, hearing, availability session, or other public event, the agency making the request shall give the other agency at least two weeks advance notice or, if circumstances prevent such notice, then as much advance notice as possible.

d. DHSS and DNR will share information with one another regarding environmental issues about which the other agency has an interest or statutory responsibility. For instance, data regarding developments related to the toxicity of contaminants, new and emerging contaminants, exposure pathways, risk assessment, and other, similar subjects. In all cases, any such data determined to warrant confidential treatment by one agency shall be managed as confidential by the other.

e. DHSS and DNR may, as appropriate and feasible, conduct joint site visits or investigations.

f. DHSS and DNR agree to meet twice per year to discuss issues of mutual interest, concern, or responsibility related to hazardous substances and public health. Each meeting will include managerial and technical staff as appropriate considering the meeting agenda (an agenda will be developed and disseminated to both agencies at least two weeks in advance of the meeting). As agreed to by both agencies, more or fewer meetings may be held during any given calendar year.

g. DHSS and DNR agree to provide appropriate and adequate training for new employees and appropriate periodic training for all employees regarding the

authorities, roles, responsibilities, and cooperative activities of the other agency. In addition, both agencies agree to assist one another with identifying training needs and content.

Section 8: Air Pollution Control

A. Overview

The purpose of this section is to describe and delineate the responsibilities of the Missouri Department of Natural Resources (DNR) and the Missouri Department of Health and Senior Services (DHSS) concerning air contaminants that may threaten human health. The goals of this section are to discuss the air pollution issues that may cross the lines of authority under the law in order to provide a common understanding of each department's responsibility and to improve coordination.

B. General Authority

1. DNR

The Missouri Air Conservation Law, Chapter 643, RSMo, contains the authorities of DNRs' Air Pollution Control Program (APCP) and the Missouri Air Conservation Commission (MACC).

Air pollution rules under the purview of APCP are covered in the Code of State Regulation Title 10, Division 10 – Air Conservation Commission.

State law grants broad authority to the MACC and APCP to regulate sources of air pollution.

2. DHSS

Under Section 192.020, RSMo, DHSS has primary responsibility for safeguarding the health of the people in the state and all its subdivisions.

Section 192.011, RSMo requires DHSS to monitor adverse health effects of the environment and prepare population risk assessments regarding environmental hazards including, but not limited to, those relating to water, air, toxic waste, solid waste, sewage disposal, and others. DHSS is to make recommendations to DNR for improvement of public health as related to the environment.

DHSS is responsible under Section 643.263, RSMo for reviewing asbestos management plans.

C. Roles and Responsibility

Air Permits

Facilities that are sources of air pollution cannot operate in Missouri without an air permit.

To protect human health, ambient air quality analysis is performed as part of air permit applications to demonstrate compliance with Risk Assessment Levels (RALs). RALs are used as guidelines to place limits on the emissions of an air pollution source and are concentrations of air toxics that are not expected to produce adverse human health effects during a defined period of exposure. These levels are established by DNR with concurrence by DHSS.

In the issuance of air permits, DNR may require an air toxics risk assessment be completed for the facility. In such cases, DHSS is consulted on the appropriate risk assessment methodology and provided the opportunity to review and comment on applicable documents.

1. **DNR**

   Based on the protocol outlined in the Standard Operating Procedure for Risk Assessment Level Determination, the APCP toxicologist develops RALs to be protective of cancer and noncancer health effects and will send the recommended RALs to the Department of Health and Senior Services' Bureau of Environmental Epidemiology (BEE) for its comments. APCP and BEE agree that the comment period will be for 30 calendar days.

   For instances where DNR requires the completion of an air toxics risk assessment, the APCP will consult with BEE on appropriate methodology and will send all applicable documents to BEE for its comments. The time period for comments will be agreed upon at the time the request is made.

2. **DHSS**

   BEE will review and either concur with the APCP toxicologist's recommended RALs or will offer its own recommendation within 30 calendar days. If BEE concurs with the APCP toxicologist, then APCP's recommended RALs would become the State's air permit emissions guidelines. If BEE does not concur with the APCP toxicologist, then BEE's recommendation will become the State's air permit emissions guidelines.

   BEE will provide consultation and advice to the APCP concerning appropriate methodology for conducting air toxics risk assessments. BEE will review and provide comments on applicable documents within a timeframe acceptable to all parties.

Asbestos

1. DNR

APCP accepts delegation of authority from the U.S. Environmental Protection Agency (EPA) for enforcement of the asbestos provisions of the National Emissions Standards for Hazardous Air Pollutants (NESHAP). The Asbestos NESHAP may be found at 40 CFR Part 61, subpart M. The Asbestos NESHAP applies to the demolition of all regulated structures, and demolition or renovation projects that disturb 160 square feet, 260 linear feet, or 35 cubic feet, or more, of regulated asbestos-containing material. State Regulation 10 CSR 10-6.080 adopts the asbestos NESHAP by reference.

State Regulation 10 CSR 10-6.241, "Asbestos Projects-Registration, Notification and Performance Requirements", sets forth requirements for registration of any person that conducts an asbestos project, for asbestos project notification, and for reporting and record keeping associated with asbestos projects.

State Regulation 10 CSR 10-6.250, "Asbestos Abatement Projects -Certification, Accreditation and Business Exemption Requirements", regulates training, testing and certification of asbestos abatement occupations. Regulated occupations are workers, supervisors, inspectors, management planners, project designers and air sampling professionals and technicians. This state regulation also requires Missouri accreditation of training providers that train persons for the purpose of becoming Missouri certified in one or more of the regulated occupations.

APCP Enforcement Section staff answer questions about requirements, review asbestos project notifications and demolition project notifications, inspect asbestos abatement and demolition projects, review applications for course accreditation, audit accredited courses, review applications for asbestos occupational certification and contractor registration, and approve or deny accreditation, registration or certification as appropriate. Enforcement actions are also taken against those found in violation of the department's requirement to act as a deterrent from committing future violations.

2. DHSS

The Asbestos Hazard Emergency Response Act (AHERA), a provision of the Toxic Substances Control Act, became law in 1986. The AHERA may be found at 40 CFR Part 763, subpart E. Public school districts and private or parochial schools (collectively called local education agencies) are subject to AHERA's requirements.

AHERA requires local education agencies to inspect their schools for asbestos-containing building material and prepare management plans to prevent or reduce asbestos hazards.

These requirements are incorporated by reference in Section 643.263, RSMo. This statute specifies asbestos management plans to be submitted to DHSS for review and approval. Furthermore, the statute expands on those required to submit asbestos management plans to include political subdivisions in addition to local education agencies.

DHSS also responds to health effects concerns from the general public with regards to asbestos exposure.

D. Cooperative Activities

Both agencies agree that DHSS will review air toxics data from a health perspective when DNR requests assistance. DNR agrees that APCP will consult with BEE when there is an actual or potential human exposure under investigation. DHSS agrees that BEE will provide APCP with consultation and technical advice on possible health effects from exposure to air toxics and will participate in the issuance of public health information.

When an activity or general condition poses a significant risk of air contamination and constitutes a clear and present danger to the public health, the public welfare or the environment, the director of DNR can issue a cease and desist order (Section 643.090, RSMo). The action is reserved for emergencies. Before issuing a cease and desist order, APCP will request concurrence from DHSS that the activity or contamination poses a danger to public health.

Section 9: Laboratory

A. Overview

The DHSS Missouri State Public Health Laboratory (MSPHL) and the DNR State Environmental Laboratory maintain distinct biological, chemical, and radiological laboratory testing capabilities that provide analytical laboratory services to support local, state, and federal programs. This section outlines the general laboratory capabilities that are available at each laboratory and is intended to enhance the coordination and utilization of laboratory services.

B. General Authority

Drinking water: Section 640.100.10, RSMo 1992.
Missouri State Emergency Operation Plan

In general, laboratory services are conducted in support of program authorities previously listed in this agreement.

C. Roles and Responsibility

1. DHSS

DHSS maintains the Missouri State Public Health Laboratory (SPHL). The SPHL is dedicated to the promotion, protection, and assurance of the health of Missouri's citizens by providing a wide range of diagnostic and analytical services. These services include quality-assurance laboratory testing for infectious diseases, genetic disorders and environmental health concerns, both in support of public health programs, and as a reference laboratory performing unusual or specialized procedures. The SPHL provides analytical laboratory capabilities for biological, chemical, and radiological emergency events through participation in emergency laboratory networks, such as; the Laboratory Response Network (LRN), Food Emergency Response Network (FERN), EPA Region 7 Response Plan Consortium and the Emergency Response Laboratory Network (ERLN).

The SPHL maintains the following analytical testing units that may interact with DNR programs:

Environmental Bacteriology

- Tests public and private drinking water supplies and recreational waters for the presence of total Coliform and Escherichia coli bacteria (See Public Drinking Water Section)
- Tests food suspected of causing disease

- Inspects and approves water and milk testing laboratories
- Tests environmental samples for biological terrorism agents.

Chemistry

- Conducts lead analysis of blood samples collected from children
- Performs various inorganic and organic chemical analyses on private water supplies
- Conducts heavy metal analyses on samples obtained from household plumbing supplied by public water
- Conducts radiological analyses on water and various other environmental and food materials
- Conducts lead analysis on soil, water, paint samples and dust wipes collected from homes of children with elevated blood lead levels
- Conducts analyses of human serum samples for various chemicals collected in response to a chemical terrorism event
- Conducts biomonitoring analyses and studies of various chemicals resulting from human chemical exposures

Microbiology

- Examines samples for the presence of enteric pathogens such as Salmonella and Shigella
- Examines samples for the presence of scabies, intestinal and blood parasites
- Identifies unusual and dangerous pathogenic bacteria received from other laboratories
- Examines samples for Bordetella pertussis
- Serves as an advanced reference laboratory for detection and the identification of bacterial bioterrorism agents
- Collects and disseminates surveillance data on infectious bacterial diseases

Other SPHL laboratory testing units: Tuberculosis, Immunology, Virology, Newborn Screening

2. DNR

DNR maintains EPA primacy for public drinking water chemical analysis and operates the State Environmental Laboratory. The Environmental Services Program (ESP),

Chemical Analysis Section (CAS) houses the state's primary laboratory for drinking water chemistry and environmental chemistry. CAS provides analytical support for programs throughout the department and for other state agencies. The CAS laboratory maintains analytical laboratory capabilities to identify and confirm the presence of natural and man-made pollutants. The CAS provides analytical laboratory capabilities for chemical emergency events through participation in emergency laboratory networks, such as the ERLN, EPA Region 7 Response Plan Consortium, and the DNR Environmental Emergency Response (EER). CAS maintains a contract laboratory to provide analytical laboratory services for various chemical agent analyses not available at CAS.

The ESP/CAS laboratory maintains the following analytical testing capabilities, including methodology and instrumentation, and may interact with SPHL:

Chemistry

- Tests public drinking water for a variety of organic and inorganic constituents.
- Tests a variety of matrices for the presence of metals; volatile organic compounds; semi-volatile organic compounds; nonmetallic constituents; aggregate organic constituents; physical and aggregate properties and other individual organic compounds.
- Matrices tested include: groundwater; surface water; drinking water; wastewater; soil; sediment; ambient air; indoor air; landfill leachate; industrial and other unknown products.

Other ESP field and laboratory testing units: Aquatic Biological Assessment; Water Quality Monitoring; Air Quality Monitoring; Air Quality Assurance; Environmental Emergency Response and Field Services

D. Cooperative Activities

1. DHSS and DNR laboratories will continue effective collaboration to ensure a general awareness of each laboratory's analytical capabilities, roles, and emergency contact information.

2. DHSS and DNR laboratories will provide inter-laboratory support within each entity's authorized capabilities based upon an evaluation and agreement of both laboratories at the time of an event requiring a supportive response.

3. DHSS and DNR laboratories will provide routine and emergency laboratory information to local, state, and federal stakeholders in order to facilitate appropriate public health and environmental investigation, evaluation, monitoring, and emergency response.

4. DNR is the primary laboratory for conducting chemical analysis of public drinking water supplies in Missouri. DHSS SPHL is the primary laboratory for conducting microbiological analysis of public drinking water supplies in Missouri (See Public Drinking Water Section). DHSS SPHL analyzes entities supplied by public drinking water sources as a part of an investigation of internal dwelling chemical contamination. This is not an assessment of the public drinking water source.

5. DHSS shall provide at least one SPHL staff member to serve as the Laboratory Certification Officer (LCO) / Microbiology Program Manager for the Drinking Water Microbiology Laboratory Certification Program administered by the DNR PDWB. This laboratory certification program is administered under the provisions of the U.S. EPA *Manual for the Certification of Laboratories Analyzing Drinking Water: Criteria and Procedures, Quality Assurance* (MCLADW), Fifth Edition, 2005, EPA publication 815-R-05-004. The Director of the DNR PDWB serves as the Certifying Authority (CA) for this program (See Public Drinking Water Section for specific details of LCO/Microbiology Program Manager responsibilities).

6. DHSS will normally provide chemical and microbiological analysis for private water supplies. DNR's laboratory may conduct chemical analysis of samples from private water supplies when necessary to support the activities of other environmental programs in DNR.

7. DHSS and DNR agree that the cost of all laboratory services, personnel, equipment, material, and information that is utilized for laboratory operations shall be through a respective existing department funding source. Funding for services not covered by an existing source will be negotiated at the time the service is requested.

Section 10: Terrorist/WMD and Other Emergency Response Events

A. Overview

The purpose of this section is to provide an understanding of the capabilities and responsibilities of DHSS and DNR concerning the response and recovery from a terrorist incident, tampering event, or other emergency events involving the use of weapons of mass destruction (WMD). WMD include the use of chemical, biological, radiological, nuclear, or explosive materials. This section does not supersede any previous section and further delineate roles and responsibilities of DHSS and DNR during a Terrorist/WMD and other emergency response incident

The *National Response Framework* (NRF) and the *Missouri State Emergency Operations Plan* (MO SEOP) provide for a rapid response to a WMD incident by state and federal agencies. The Federal Bureau of Investigation (FBI) is the Primary Federal Agency (PFA) responsible for investigating a terrorist incident. However, the initial response to a terrorist incident or a tampering event or other emergency responses incident will be the responsibility of local law enforcement and emergency response agencies. It will be imperative that DHSS and DNR quickly provide support to these local agencies in the absence of a federal response or before outside assistance can be deployed to the scene. Tampering events may also be investigated under authority of local and state agencies (an event may not rise to the level requiring federal involvement).

The MO SEOP assigns the responsibility for coordinating the State's overall resource management phase of a terrorist incident or a tampering event or other emergency responses to the State Emergency Management Agency (SEMA). The MO SEOP also assigns responsibilities and supporting roles to both DHSS and DNR. This section will discuss those assignments that require both DHSS and DNR support and how the departments will coordinate their respective actions. An organizational chart of the State of Missouri's response to a terrorist event is provided at the end of this section.

B. General Authority

1. DHSS

DHSS has primary responsibility for safeguarding the health of the people in the state and all its subdivisions (Section 192.020, RSMo).

DHSS has the responsibility and broad authorities to investigate and prevent disease under Section 192.020, RSMo, and 19 CSR 20-20.010 through 19 CSR 20-20.100. The list of reportable diseases and conditions found in 19 CSR 20-20.020 includes but is

not limited to "diseases within the immediately reportable disease category [that] pose a risk to national security because they: can be easily disseminated or transmitted from person to person; result in high mortality rates and have the potential for major public health impact; might cause public panic and social disruption; and require special action for public health preparedness" including but not limited to those occurring naturally, from accidental exposure, or as a result of a bioterrorism event; instances, clusters, or outbreaks that appear to be a result of a terrorist act or the intentional or deliberate release of biological, chemical, radiological, or physical agents; and even diseases occurring from an undetected bioterrorism event.

Under 19 CSR 20-3.040 DHSS has the authority to investigate as necessary private water supplies and to protect the public from a private water supply that is or may be a menace to health.

DHSS statutes and regulations regulate water supplies in lodging establishments (from a source other than a public water supply under Section 315.024, RSMo and 19 CSR 20-3.050 *Sanitation and Safety Standards for Lodging Establishments*) and food establishments (under 19 CSR 20-1.025 *Sanitation of Food Establishments;* U.S. Department of Health and Human Services Public Health Service Food and Drug Administration *1999 US Food Code 5-101.11 through 5-101.13*).

Under 19 CSR 20-3.060 DHSS has authority with regard to lodging establishments to issue boil orders, to require the provision of safe alternative water, and ensure standards for bottled water and ice when necessary to safeguard the health of the people of Missouri, and to safeguard the health of the people of Missouri under 19 CSR 20.1-025 *Sanitation of Food Establishments*, under 19 CSR 20-1.030 *Sanitation and Production Standards for Frozen Desserts*, under 19 CSR 20-1.040 *Inspection of the Manufacture and Sale of Foods*, and under 19 CSR 20-1.050 *Sanitation Standards for the Manufacture of Soft Drinks and Beverages*.

Under Section 260.445.5, RSMo and section 260.480, RSMo, upon a request from DNR DHSS is to evaluate the effects to human health of any abandoned or uncontrolled site, including releases of hazardous substances as defined in Section 260.500, RSMo, which includes some WMD agents. These evaluations can include immediate investigatory response to actual or potential environmental contamination, and advice on appropriate risk management activities to reduce or eliminate health hazards. It can also involve evaluating the human toxicity, and assessing risk from exposure to all types of hazardous substances in the environment. Section 192.011, RSMo requires DHSS "to monitor the adverse health

effects of the environment and prepare population risk assessments regarding environmental hazards including but not limited to those relating to water, air, toxic waste, solid waste, sewage disposal, and others" and make recommendations to DNR, including in matters of known or possible bioterrorism.

Responsibilities of DHSS, with respect to radiation protection, are outlined in Chapter 192, RSMo. Section 192.510, RSMo requires DHSS to respond to all radiation emergencies, including any related to terrorism, and to coordinate its emergency plans and actions with DNR and the State Emergency Management Agency. Those functions are performed by DHSS, Radiological Emergency Program (REP). Pursuant to 19 CSR 20-20.020, DHSS receives reports of immediately reportable diseases or conditions including "instances, clusters, or outbreaks of unusual diseases or manifestations of illness and clusters or instances of unexplained deaths which appear to be a result of a terrorist act or the intentional or deliberate release of ...radiological... agents, including exposures through food, water, or air." See Section 6 for additional information related to radiological response.

2. DNR

Under Sections 640.100-640.140, RSMo and associated rules (10 CSR 60; 1-16), Public Drinking Water Branch (PDWB) has the responsibility to require testing and reporting of analyses of public water supplies, and to enforce the Missouri Safe Drinking Water Act (SDWA). Under Sections 260.350-260.550, RSMo, HWP is responsible for supervision and enforcement of the Missouri Hazardous Waste Management Law.

Article IV of the constitution designates DNR as the agency responsible for environmental control. The capability to respond to emergencies, which may threaten the environment, is essential to that control. The Division of Environmental Quality (DEQ) within DNR maintains expertise in that area. Pursuant to Section 260.505, RSMo, DNR has developed a hazardous substance emergency response plan as an appendix to the MO SEOP.

Under Sections 260.500-260.550, RSMo and 10 CSR 24.2.010 (5) (d) and 10 CSR 24.3.010 (1), EER is responsible for ensuring the protection of the public health and the environment from hazardous substance emergencies, which includes many WMD agents, and being notified of hazardous substance releases involved in a terrorist incident or a tampering event or other emergency responses.

3. Joint Authorities

Under Sections 640.100-640.140, RSMo, DHSS/Missouri State Public Health Laboratory (MSPHL) and DNR Environmental Services Program (ESP) laboratory are to provide the analyses required under the SDWA.

MO SEOP also references these roles and authorities.

C. Roles and Responsibilities

1. DHSS

DHSS maintains the MSPHL. The MSPHL provides analytical laboratory capabilities for biological, chemical, and radiological emergency events through participation in emergency laboratory networks, such as the Laboratory Response Network (LRN), Food Emergency Response Network (FERN), EPA Region 7 Response Plan Consortium and the Emergency Response Laboratory Network (ERLN).

The MSPHL maintains emergency laboratory capabilities to:

- Conduct various biological agent analyses in environmental samples through the LRN.
- Conduct various chemical agent analyses in clinical samples through the LRN.
- Conduct various biological and chemical agent analyses in drinking water samples and serve as the primary biological testing and response laboratory for the state's public drinking supplies.
- Conduct various radiological agent analyses in environmental samples.
- Conducts various biological, chemical, and radiological analyses in food samples.

The Center for Emergency Response and Terrorism (CERT) coordinates planning and response activities for public health emergencies, such as natural disasters, pandemic influenza, and biological, chemical, and radiological/nuclear terrorism. Through partnerships with local public health agencies, hospitals and other health care organizations, local government and law enforcement agencies, schools, and other partners, CERT works to assure systems are in place to protect the health of Missourians during a public health emergency.

The Bureau of Communicable Disease Control and Prevention (BCDCP) receives disease case reports and syndromic surveillance data (ESSENCE data) and assures the rapid response to disease situations of public health concern, including disease outbreaks, natural disasters, and bioterrorism events. BCDCP provides on- and offsite technical assistance/consultation/training on disease investigation, prevention and control activities for local public health agencies and health care providers.

The Bureau of Environmental Health Services (BEHS) provides guidelines/recommendations, training and technical assistance/consultation to local public health agencies on coordination of environmentally linked disease outbreak investigations, disease investigation control activities, food sanitation and analysis of data. BEHS also provides public health response to any emergencies affecting food, lodging safety and private water, including rapid response to public health emergencies and disease outbreaks, including bioterrorism events.

The Bureau of Environmental Epidemiology (BEE) is involved in the investigation and prevention of diseases related to the environment. The bureau's efforts focus on diseases associated with exposure to chemical and physical agents in our environment. Services include:

- Conducting epidemiological studies of environmentally-related outbreaks of disease.
- Providing public health consultation and toxicological consultation for emergencies involving chemicals.
- Providing technical advice related to pesticides and other hazardous substances.
- Responding to emergencies affecting private water supplies.
- Preparing for and responding to radiological emergencies through the Radiological Emergency Program.

2. DNR

DNR maintains the State Environmental Laboratory. The Environmental Services Program (ESP), Chemical Analysis Section (CAS) houses the state's primary laboratory for public drinking water chemistry and environmental chemistry. CAS provides analytical support for programs throughout the department and for other state agencies. The CAS laboratory maintains analytical laboratory capabilities to identify and confirm the presence of natural and man-made pollutants. The CAS provides analytical laboratory capabilities for chemical emergency events through participation in emergency laboratory networks, such as the ERLN, EPA Region 7 Response Plan Consortium, and the DNR Environmental Emergency Response (EER).

The CAS maintains emergency laboratory capabilities to:

- Conduct various chemical agent analyses in environmental samples, including air testing using summa canister sampling.
- Conduct various chemical agent analyses in drinking water samples and is the primary chemical testing and response laboratory for the state's public drinking water supplies.
- Conduct various chemical agent analyses through the ERLN.
- Conduct various chemical agent analyses in support of the DNR EER.
- Maintains contract laboratories to provide analytical services for various chemical agent and radiological analyses not available at CAS.

In addition, the ESP EER Section has CBRNE-related field sampling and air monitoring equipment that is available to support local fire, haz-mat and law enforcement entities as needed. The EER section will support response operations to terrorist incident or a tampering event or other emergency response events involving hazardous materials/WMD.

The Public Drinking Water Branch (PDWB) will support response operations to terrorist incident or a tampering event or other emergency response incidents involving public drinking water systems.

The HWP will be responsible for oversight of a long-term cleanup of hazardous substance releases associated with terrorist incidents, tampering events or other emergency response events involving real or threatened use of WMD.

The Division of State Parks' Rangers Program may support response operations by providing law enforcement personnel through mission assignments, primarily through a gubernatorial declaration of a state of emergency.

3. Joint Responsibility

Any terrorist incident, tampering event or other emergency responses event will be managed using the guidance provided by the National Incident Management System (NIMS) and the National Response Framework. All emergency plans require that an Incident Command (IC) structure be established. All assets, federal, state and/or local, will work through this system.

D. Cooperative Activities

Communications

1. DHSS

The appropriate single point of contact for notification at DHSS shall be the Department's Situation Room (DSR) twenty-four hour telephone hotline at (800) 392-0272. DHSS will notify DNR and management staff as appropriate upon receipt of information pertaining to a WMD Incident.

2. DNR

The appropriate single point of contact for notification at DNR shall be the Environmental Services Program's (ESP) Environmental Emergency Response (EER) twenty-four hour telephone hotline at (573) 634-2436. DNR will notify DHSS and management staff as appropriate upon receipt of information pertaining to a WMD Incident.

3. Joint Responsibility

Normal procedures for notification of incidents to the departments are covered in Section 2 of this document. Both departments agree to notify the other and SEMA (573-751-2748) immediately upon receipt of information pertaining to a terrorist incident or a tampering event or other emergency response incident.

One very important task for the IC is to provide information to the public. The NIMS provides for the establishment of a Joint Information Center (JIC) within the IC structure. The JIC provides a location for organizations participating in the management of an incident to work together to ensure that timely, accurate, easy-to-understand, and consistent information is disseminated to the public. Staff from DHSS and DNR will be prepared to support JIC operations and/or other public information coordination and dissemination efforts. This will be accomplished by collaborating with other local, state and federal responding agencies on news releases, public health and safety advisories, fact sheets, Web-based resources and other vital information about the emergency event.

Emergency Response

1. DHSS

DHSS will assess, where necessary in conjunction with other state and federal agencies, the human toxicity and the risk to human health of chemical, biological and radiological agents in the environment. If requested, DHSS will provide information regarding protection of human health to the local response teams, health agencies and emergency management as these entities administer the personnel monitoring program and decontamination operations. DHSS may assist with providing guidance for the preparation and maintenance of exposure records of personnel involved in the response and recovery from a WMD incident.

If the incident produces radiological contamination, DHSS will provide guidance on the radiological dose limitations for emergency workers. DHSS can also provide technical expertise and equipment to isolate and characterize radiological contamination. DHSS has trained staff that can collect environmental samples from a radiological or biological event, in particular a biological event impacting food or water. However, DHSS staff does not have the personal protective equipment or training to enter an atmosphere requiring greater than Level C protection and will request assistance in such sampling from local responders such as an adequately trained HSRRS Team, DNR, or the National Guard 7th Civil Support Team.

If the event is large enough and local/state pharmaceutical supplies will be depleted, DHSS will request, through the Governor's Office, access to the Centers for Disease Control and Prevention (CDC) Strategic National Stockpile to obtain the medical supplies necessary to counter the effects of chemical, biological, or radiological agents. DHSS will provide priority mass prophylaxis to state-level first responders in order to protect emergency workers. Other workers will obtain prophylactic medications through points of dispensing which will be made available in affected communities by local public health agencies.

DHSS has pre-positioned CHEMPACK containers which contain antidotes to nerve agent exposures. Containers have pre-packaged medication and auto-injectors for use by first responders. These antidotes are available for use throughout the state. During events involving dirty bombs with potential release of plutonium, americium or curium, DHSS has pre-positioned diethylene triamine pentaacetic acid (DTPA), a chelating agent for treatment of first responders and other individuals exposed to these isotopes.

Staff from DHSS will need to be prepared to support the JIC by collaborating to prepare advisories concerning the public health and environmental effects resulting from the WMD incident. Staff from DHSS and DNR will be prepared to support JIC operations and/or other public information coordination and dissemination efforts. This will be accomplished by collaborating with other local, state and federal responding agencies on news releases, public health and safety advisories, fact sheets, Web-based resources and other vital information about the emergency event.

2. **DNR**

DNR EER has the capability to support emergency operations by providing emergency response personnel and equipment statewide. Several Homeland Security Regional Response System (HSRRS) Teams have been assembled throughout the state to provide emergency response capabilities during a WMD incident. The EER can provide technical expertise and resources to the HSRRS assets and/or local emergency response organizations to support initial response, cleanup, and decontamination. The EER and the HSRRS have the capability of conducting operations in contaminated environments related to WMD events. Response activities may include obtaining environmental samples. These activities will be discussed below, under Sampling and Analysis. DNR is also responsible for monitoring the air quality of the contaminated areas and providing oversight of any environmental cleanup operations.

Staff from DNR will need to be prepared to support the JIC by collaborating to prepare advisories concerning the public health and environmental effects resulting from the WMD incident.

If there is potential for contamination to drinking water supplies, the PDWB and EER will utilize the Investigation Protocol for Potentially Compromised Drinking Water Systems and the Public Drinking Water Emergency Operation Plans for response operations.

Laboratory Cooperative Activities

DHSS and DNR will collaborate to ensure that environmental and clinical samples that are collected in response to a biological, chemical, or radiological emergency event will be provided to the laboratory that has the authorization/capability to analyze the samples in the most expeditious manner.

The DHSS and DNR laboratories will continue effective collaboration to ensure a general awareness of each laboratory's analytical capabilities, roles, and emergency contact information.

The DHSS and DNR laboratories will provide inter-laboratory support within each entity's authorized capabilities based upon an evaluation and agreement of both laboratories at the time of an event requiring a supportive response.

The DHSS and DNR laboratories will provide emergency laboratory information to local, state, and federal stakeholders in order to facilitate appropriate public health and environmental emergency response.

Sampling

The number and type of samples required to make a sound judgment about the safety of the environment and of those persons exposed will depend on the scope of the incident. Samples of media not normally collected may need to be collected and analyzed to determine the full extent of contamination. DNR and DHSS will collaborate as appropriate to determine sampling and analysis needs adequate to address an event.

In addition to DHSS and DNR, the MO SEOP tasks the Missouri Department of Agriculture (MDA) and the Missouri Department of Conservation (MDC) with obtaining samples within their respective jurisdictions to be analyzed. DHSS, DNR, MDA, and MDC will need to coordinate efforts to ensure all food supplies, farm animals, crops, pets, fish, wildlife, and their habitats that have been potentially exposed to a harmful agent during a terrorist incident, tampering event or other emergency response to a WMD event are sampled, analyzed, and decisions made regarding their public use.

Recovery

After the initial response to a WMD incident, the goal of the emergency management system is to return the affected population and environment to as near a normal condition as possible. Interaction between the departments regarding cleanup levels and risks to human health will continue until the Governor has declared the incident recovery operations complete.

1. **DHSS**

   DHSS will continue to monitor/track potential exposures and continue to provide information concerning short and long term health effects of exposure to the contaminant(s).

2. **DNR**

   DNR will continue to support, monitor, and oversee local cleanup and decontamination operations.

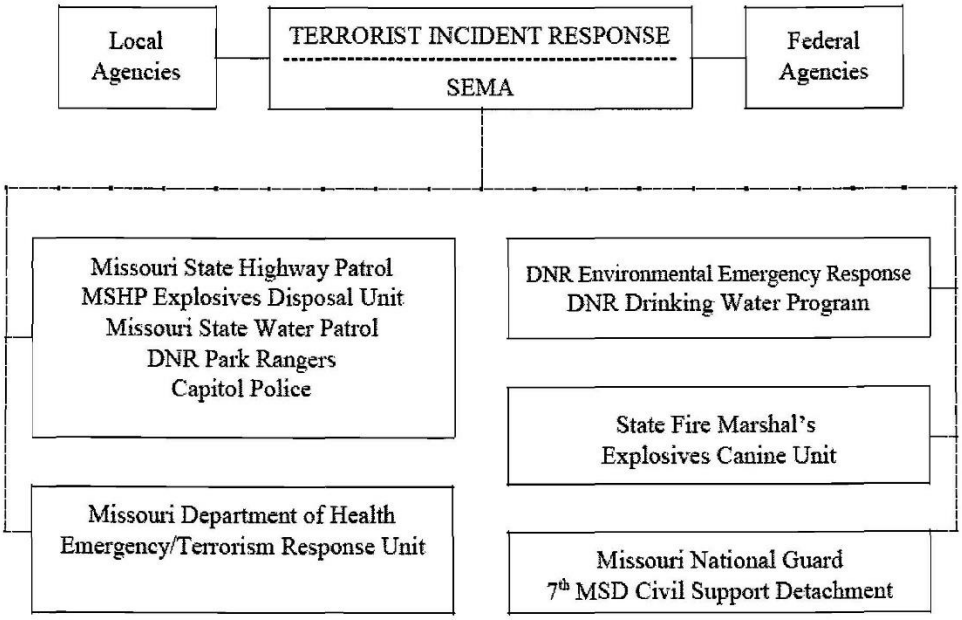
3. **Other**

   As federal assets de-mobilize from the scene, jurisdiction for final recovery operations will pass from the FBI and Federal Emergency Management Agency (FEMA) to the Governor and SEMA. State and local agencies will need to continue to work together and support the state incident management system until the state returns to normal operations. Each department will continue to provide support until the treatment of victims and the cleanup of the environment is complete.

Funding

DHSS and DNR agree that the funding of all laboratory services, personnel, equipment, material, and information that is utilized for an emergency response shall be through a respective existing department funding source. Funding for services not covered by an existing source will be negotiated at the time the service is requested. Each department will track costs associated with the response.

ORGANIZATIONAL CHART FOR TERRORIST INCIDENT RESPONSE



Section 11: Long Term Stewardship

A. Overview

Long-term stewardship (LTS) includes all activities necessary to ensure sustainable protection of human health and the environment at sites with a history of environmental issues. This may include sites where contamination or residual contamination is left in place after remediation, as well as sites with known or potential uncontrolled contamination. Long-term stewardship is a necessary component of 'risk-based' remediation strategies which may result in a site suitable for certain uses and not for others. To ensure protectiveness of these remedies, exposure must be prevented for as long as residual contamination remains. Long-term stewardship includes all engineered and institutional controls designed to contain or prevent exposures to residual contamination, such as:

- Monitoring and enforcement activities;
- Data collection, management and dissemination;
- Repair and maintenance of engineered controls or barriers;
- Access and land use restrictions; and
- Timely and effective public information.

The goal of this section is to outline the way that the agencies cooperate to ensure that site owners, occupants, prospective buyers and the public are aware of environmental issues.

B. General Authority

1. DHSS

DHSS has the responsibility to ensure protection of public health within the state of Missouri. This authority is provided to the department in chapters 192 and 260 of the Revised Statutes of Missouri. DHSS ensures protection of public health at sites with a history of environmental issues by:

- Reviewing information on environmental hazards;
- Assessing the potential for exposure to those hazards;
- Assessing the potential health risk if exposure occurs; and
- Providing education, information and recommendations to DNR, the Environmental Protection Agency, other agencies (federal, state and local) and to the public on ways to reduce exposure to environmental hazards.

2. DNR

DNR has a responsibility to identify, assess and assure proper management of contaminated or potentially contaminated sites. This authority is provided to the department in chapter 260 of the Revised Statutes of Missouri, as well as under several federal laws (Comprehensive Environmental Responsibility, Compensation, Liability and Act, or CERCLA, and the Resource Conservation and Recovery Act, or RCRA). For sites where remedies are needed to address contamination, DNR promotes the continued protectiveness of those remedies by:

- Developing or approving remedies;
- Ensuring long-term protection for future users as well as current;
- Developing a database of long-term stewardship sites and conveying information about these sites to the public, as required in the Missouri Environmental Covenants Act

C. Roles and Responsibility

1. DHSS

In general, DHSS is responsible for assessing risks from exposure to contaminants remaining at sites requiring long-term stewardship. Specific roles and responsibilities include:

- Assessing risks related to long-term stewardship
- Collaborating with appropriate state, federal and local health and environmental agencies
- Providing appropriate information to the public related to environmental health risks at long-term stewardship sites
- Serving as an information conduit to Local Public Health Agencies and the public

2. DNR

In general, DNR is responsible for managing the risks from exposure to contaminants remaining at sites requiring long-term stewardship. Specific roles and responsibilities include:

- Managing long term operations and maintenance (O&M) of the remedy
- Collecting and maintaining information regarding effectiveness of the remedy
- Monitoring engineered barriers and controls
- Monitoring access and land use controls
- Disseminating long-term stewardship information to DHSS and the public

3. Joint Responsibilities

The agencies have several responsibilities in common to ensure long-term stewardship:

- Communicating and sharing necessary information
- Consulting with each other on appropriateness of long-term stewardship aspects of remedies
- Consulting with each other on continued protectiveness of actions taken at a site or changes in site conditions

D. Cooperative Activities

1. DHSS

The following are activities which DHSS shall undertake in cooperation with DNR to ensure long-term protectiveness of remedies put in place at sites that were or may have been contaminated:

- Reviewing information and providing recommendations as to ensure that public health is protected at long-term stewardship sites. This may include individual site remedies (CERCLA, RCRA, Registry, etc.), multi-site issues (lead, dioxin, sewage, etc.) and agency or program guidance documents (MRBCA, etc.)
- Providing information to the public related to public health implications of long-term stewardship sites
- Making information available on long-term stewardship sites to DNR. This may include information from the public or Local Public Health Agencies on the effectiveness of long-term stewardship remedies or potential effectiveness of proposed remedies or other information as appropriate.

2. DNR

The following are activities which DNR shall undertake in cooperation with DHSS to ensure long-term protectiveness of remedies put in place at sites that were or may have been contaminated:

- Accepting, reviewing and considering recommendations from DHSS regarding public health concerns at long-term stewardship sites. This may include individual site remedies (CERCLA, RCRA, Registry, etc.), multi-site issues (lead, dioxin, sewage, etc.) and agency or program guidance documents (MRBCA, etc.).
- Making information available to DHSS and the public. This may take the form of a database or web page already in use or under development by DNR.

3. Other

There are several activities that are required of both agencies. These activities are best completed as joint activities. They include:

- Developing long-term stewardship plans in cooperation with local partners,
- Preparing and releasing public information on long-term stewardship site issues,
- Holding and attending joint public meetings, and
- Participating in regular interagency coordination meetings to update each other on long-term stewardship activities.

SIGNATURES

THIS MEMORANDUM OF UNDERSTANDING IS AGREED TO AND IS BINDING ON OUR RESPECTIVE AGENCIES.

MISSOURI DEPARTMENT OF HEALTH AND SENIOR SERVICES

Margaret Donnelly — Date

Director

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Sara Parker Pauley — Date

Director

Acronym Glossary

AAL	Acceptable Ambient Level
AHERA	Asbestos Hazard Emergency Response Act
APCP	Air Pollution Control Program
BEE	Bureau of Environmental Epidemiology
BEHS	Bureau of Environmental Health Services
CA	Certifying Authority
CAS	Chemical Analysis Section
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSR	Code of State Regulations
cumm. supp.	Cumulative supplement
DCEE	Disease Control and Environmental Epidemiology
DCPH	Division of Community and Public Health
DEQ	Division of Environmental Quality
DGLS	Division of Geology and Land Survey
DHSS	Department of Health and Senior Services
DNR	Department of Natural Resources
DPS	Department of Public Safety
EER	Environmental Emergency Response
EHOG	Environmental Health Operational Guidelines
EPA	Environmental Protection Agency
ERLN	Emergency Response Laboratory Network
ESP	Environmental Services Program's

FAC	Financial Assistance Center
FDA	Federal Drug Administration
FERN	Food Emergency Response Network
GPD	Gallons per Day
HWP	Hazardous Waste Program
HWF	Hazardous Waste Fund
HWMC	Hazardous Waste Management Commission
LCO	Laboratory Certification Officer
LTS	Long-term stewardship
LPHA	Local Public Health Agency
LRN	Laboratory Response Network
MACC	Missouri Air Conservation Commission
MCLADW	Manual for the Certification of Laboratories Analyzing Drinking Water
mg/L	Milligrams per Liter
MOU	Memorandum of Understanding
MRBCA	Missouri Risk-Based Corrective Action
MSPHL	Missouri State Public Health Laboratory
NESHAP	National Emissions Standards for Hazardous Air Pollutants
O&M	Operations and Maintenance
ONDCP	Office of National Drug Control Policy
OSHA	Occupational Safety & Health Administration
PDWB	Public Drinking Water Branch
PWS	Public Water System
RAGS	Risk Assessment Guidance
RAL	Risk Assessment Level

RCRA	Resource Conservation and Recovery Act of 1976
REP	Radiological Emergency Program
RSMo	Revised Statutes of Missouri
SEMA	State Emergency Management Agency
SOP	Standard Operating Procedures
SPHL	State Public Health Laboratory
SWMP	Solid Waste Management Program
WPP	Water Protection Program

Organization Charts

C. MDNR 2018 UIC White Paper

Department of Natural Resources
Missouri Geological Survey
Underground Injection Control Program in Missouri
8-24-18

Background

Under the Safe Drinking Water Act (SDWA) of 1974, the U.S. Environmental Protection Agency (EPA) sets minimum federal requirements for injection practices that protect public health by preventing injection wells from contaminating underground sources of drinking water (USDWs). All injection must be authorized by rule or permit. Injection well owners and operators may not site, construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity that endangers USDWs. The purpose of the UIC requirements is to:

- Ensure that injected fluids stay within the well and the intended injection zone, or
- Mandate that fluids that are directly or indirectly injected into a USDW do not cause a public water system to violate drinking water standards or otherwise adversely affect public health.

Classes of UIC Wells

EPA groups injection wells into six classes, based on similarity in the fluids injected, activities, construction, injection depth, design, and operating techniques.

Class I Wells used to inject hazardous wastes, industrial non-hazardous liquids, or municipal wastewater beneath the lowermost USDW. *This class of wells is banned in Missouri.*

Class II Wells used to inject brines and other fluids associated with oil and gas production, and hydrocarbons for storage.

Class III Wells used to inject fluids associated with solution mining of minerals beneath the lowermost USDW.

Class IV Wells used to inject hazardous or radioactive wastes into or above USDWs. These wells are banned unless authorized under a federal or state groundwater remediation project. *This class of wells is banned in Missouri.*

Class V All injection wells not included in other classes. In general, Class V wells inject non-hazardous fluids into or above USDWs and are typically shallow, on-site disposal systems. However, there are some deep Class V wells that inject into or below USDWs.

Class VI Inject carbon dioxide (CO_2) for long-term storage, also known as Geologic Sequestration of CO_2.

UIC in Missouri

The State of Missouri has obtained primacy for its UIC program from the EPA and receives funding from EPA to administer the program. As specified in the UIC program Memorandum of Agreement between the State of Missouri and EPA Region VII, the Missouri Geological Survey (MGS) is responsible for coordinating the UIC program and reporting to EPA all state-wide injection activity, including the submission of grant applications, quarterly reporting and maintaining a state-wide inventory and status of all injection wells.

Missouri's UIC program regulates the Classes I-V wells as follows:

Class I
Class I injection wells are banned in Missouri by section 577.155, RSMo. This law is a general ban on waste injection, except in specified instances, prohibiting hazardous waste injection. The department's Division of Environmental Quality (DEQ) would also be responsible for enforcing the prohibition on Class I wells under the Missouri Clean Water Law (Chapter 644, RSMo).

Class II
Class II injection wells are regulated by MGS through the State Oil and Gas Council per Chapter 259, RSMo, and the implementing regulations 10 CSR 50-1.1020 to 10 CSR 50-5.010. By rule, an oil and gas injection well is defined as "a well into which fluids are injected during all or part of the life of the well, but not including oil- or gas-producing wells into which cumulative fluid injection is less than three thousand (3000) reservoir barrels." The regulations require those wishing to operate a Class II injection well to obtain a permit from MGS.

Class III
Class III injection wells are regulated through the Clean Water Commission under 10 CSR 20-6.090. This regulation requires those wishing to operate Class III wells to obtain a permit from WPP under the Missouri Clean Water Law, Chapter 644, RSMo. To date, no permits have been issued in Missouri for this well class.

Class IV
Class IV injection wells are banned in Missouri by section 577.155, RSMo. These wells also are banned nationwide under the federal UIC regulations. DEQ would also be responsible for enforcing the prohibition on Class IV wells under the Missouri Clean Water Law (Chapter 644, RSMo).

Class V

Class V injection wells include a variety of different well types. These wells are regulated by DEQ, Department of Health and Senior Services (DHSS), MGS and county health departments. These wells generally are used to inject non-hazardous fluids into, or above, a USDW.

Class V injection wells in Missouri and how they are regulated:

Onsite Waste Water Treatment Systems with Drainfield Disposal – Onsite Waste Water Treatment Systems that place fluid into the subsurface via a perforated pipe or similar conveyance are Class V injection wells, excluding single family residences and non-residential systems serving less than 20 persons a day. A 2011 Memorandum of Understanding (MOU) between the DEQ, DHSS, and MGS, outlines the responsibilities of each agency concerning the investigation, assessment, and control of physical, chemical, radiological, and biological agents in the environment. Onsite systems with a discharge of 3000 gallons per day or more are permitted by WPP under the Clean Water Commission under 10 CSR 20-7.015. Systems with a discharge less than 3000 gallons per day are permitted by DHSS or by county health departments that have adopted by ordinance minimum state standards. State standards for on-site disposal systems can be found in Chapter 701, RSMo.

Groundwater Remediation Wells – These injection wells are used in the cleanup of contaminated sites and were permitted by the WPP through the Clean Water Commission under 10 CSR 20. A 2004 MOU between the WPP and HWP transferred authority for approving remediation projects involving injection at hazardous waste sites to the HWP. No UIC Class V permit or approval is required from WPP for injection projects as long as the terms of the MOU are met. Construction of remediation wells are regulated by MGS under the Missouri Well Construction Rules, 10 CSR 23.5010 to 10 CSR 23.5080. The MOU also requires a Class V Inventory form submission to MGS for inclusion in the required reporting to EPA.

Mine Backfill Wells – These wells are used to place a mixture of liquid and solid material into mined out portions of subsurface mines. Mine backfill wells are permitted by WPP through the Clean Water Commission under 10 CSR 20. MGS assists WPP by reviewing permits, site characterizations and groundwater monitoring plans.

Heat Pump/Air Conditioning Return Flow Wells – Groundwater used in an open loop heat pump system can be reinjected through this type of well. Heat pump systems used by more than eight single family residences or rated at greater than 600,000 British Thermal Units per hour are permitted by the WPP under 10 CSR 20.6070. Return well construction are regulated by MGS under the Missouri Well Construction Rules, 10 CSR 23.5010 to 10 CSR 23.5080.

Aquifer Recharge Wells – Aquifer recharge wells in Missouri are used to maintain hydrostatic pressure around an underground storage caverns and have been used to store drinking water. Permits for recharge wells are issued by the WPP through the Clean Water Commission under 10 CSR 20, with review by MGS personnel.

Abandoned Water Wells Used for Waste Disposal – Abandoned wells have the potential to be used to dispose of a variety of waste products that could contaminate groundwater supplies. Section 577.155, RSMo, does not allow injection into wells for the purposes of waste disposal. Enforcement of the Missouri Clean Water Law (Chapter 644, RSMo) by WPP and the Missouri Well Construction Rules by MGS would address any occurrence of these wells.

Storm Water Drainage Wells – These are wells that dispose of storm water through infiltration galleries associated with storm water detention basins. These systems have been permitted by WPP through the Clean Water Commission under 10 CSR 20.

Improved Sinkholes – These are sinkholes that have been improved in some way to control the flow of surface water into the subsurface. Stabilization of surficial material in and around the sinkhole is typically purpose of the improvement. The WPP does not currently enforce permit requirements for this type of well. Promulgation of a rule authorizing the construction and operation of this type of well has been discussed by WPP and MGS staff.

D. MDNR Quality Management Plan

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

OFFICE OF THE
REGIONAL ADMINISTRATOR

JUN 0 6 2018

Carol S. Comer
Director
Missouri Department of Natural Resources
Post Office Box 176
Jefferson City, Missouri 65102-0176

Dear Ms. Comer:

We have completed the review of the Quality Management Plan Revision 5.0 dated October 31, 2017, for the Missouri Department of Natural Resources. The document complies with the *U.S. Environmental Protection Agency Requirements for Quality Management Plans* (EPA QA/R-2, March 2001) and is approved. The original approval page and copy of the QMP are enclosed.

The anniversary date for the QMP is May 2023. The QMP must be updated appropriately and submitted on or before the anniversary date to the Regional Quality Assurance Manager for review and approval. If there are significant changes to your quality system before the anniversary date, a revised QMP must be submitted to the EPA for review and approval at the time the changes occur. Any minor revisions made to the QMP should be submitted to the Regional Quality Assurance Manager as a report when those changes occur.

If you have any questions, please call Diane Harris, Regional Quality Assurance Manager at (913)551-7258.

Sincerely,

James B. Gulliford

Jim Gulliford

RECEIVED
18 JUN 18 AM 11:09
DEPT. OF NAT. RESOURCES
ENVIRONMENTAL SERVICES

Enclosure

cc: Ed Galbraith, Director, Division of Environmental Quality, MDNR
Karla Wiseman, Quality Assurance Manager, MDNR

Printed on Recycled Paper

Quality Management Plan
Missouri Department of Natural Resources

Title and Approval Sheet

Carol S. Comer, Director
Missouri Department of Natural Resources

Date: 2-28-2018

Karla Wiseman, Quality Assurance Manager
Missouri Department of Natural Resources

Date: 11/1/17

Ed Galbraith, Division of Environmental Quality Director
Missouri Department of Natural Resources

Date: 12-03-17

Julie Allen, Division of Administrative Support Director
Missouri Department of Natural Resources

Date: 12/13/18

Joe Gillman, Missouri Geological Survey Director
Missouri Department of Natural Resources

Date: 11-16-17

Ben Ellis, Missouri State Parks Director
Missouri Department of Natural Resources

Date: 11/9/2017

Diane Harris, Regional Quality Assurance Manager
U. S. Environmental Protection Agency Region VII

Date: 05/18/2018

Jim Gulliford, Regional Administrator
U. S. Environmental Protection Agency Region VII

Date: 6/6/18

Quality Management Plan

Document Title:	Quality Management Plan for the Missouri Department of Natural Resources
Organization:	Missouri Department of Natural Resources
Responsible Officials:	Carol S. Comer, Director, Missouri Department of Natural Resources (573) 522-6221 Ed Galbraith, Director, Division of Environmental Quality (573) 751-0763 Julie Allen, Director, Division of Administrative Support (573) 751-7961 Joe Gillman, Director, Missouri Geological Survey (573) 368-2101 Ben Ellis, Director, Missouri State Parks (573) 522-6108 Karla Wiseman, Quality Assurance Manager (573) 526-3388
Plan Coverage	The Missouri Department of Natural Resources receives consolidated grant funds and enters into cooperative agreements with the U.S. Environmental Protection Agency (EPA) to operate programs under the following federal laws or their state equivalents: the Clean Water Act; Clean Air Act; Safe Drinking Water Act; Resource Conservation and Recovery Act; Comprehensive Environmental Response, Compensation, and Liability Act; and Toxic Substance Control Act. The Department also enters into cooperative agreements with other federal, state, and local partners. This quality management plan describes the policies, procedures, and management systems within the Department that are used to ensure the quality of environmental data and other natural resource data collected, stored, processed, produced, or used under interagency and financial assistance agreements. The Department applies this quality management plan to all program activities, including those activities not supported by federal funds. This quality management plan has been prepared in accordance with EPA QA/R-2, March 2001 (reissued May 2006), *EPA Requirements for Quality Management Plans*. QA/R-2 is the policy document containing the specifications and requirements for Quality Management Plans. http://www.epa.gov/quality/qs-docs/r2-final.pdf .

1. Management and Organization

1.1 Introduction

The Missouri Department of Natural Resources collects, stores, processes, produces, and uses a variety of environmental data and other natural resource data to aid in the protection, preservation, and enhancement of Missouri's natural, mineral, and cultural resources. The Department uses quality assurance practices consisting of policies, processes, procedures, specifications, standards, and documentation, which produce environmental data and other natural resource data of a quality that is adequate to meet project objectives and support agency decisions. Environmental data and other natural resource data is defined as any information that describes natural resource conditions, locations, and processes; ecological or health effects and consequences; or the performance of natural resource technology or methods. These data include information from measurements, models, and other sources.

The Department implements the quality system described in this document on a statewide basis. This document describes the management goals, policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation activities for ensuring that environmental data and other natural resource data is of known and documented quality.

1.2 Quality Assurance Goal and Policy

Goal

The goal of the Department's quality management plan is to ensure that agency methods and decisions are based on data of known and adequate quality. To meet this goal, all environmental data and other natural resource data used by the Department must be of known and documented quality and origin. Furthermore, the Department's data management practices must collect, process, store, and use data in a manner that ensures adequate quality for the intended purpose. This goal can only be achieved by ensuring that adequate quality assurance steps and procedures are used throughout the entire data management process, from initial planning through data use.

Policy

It is the policy of the Department that:

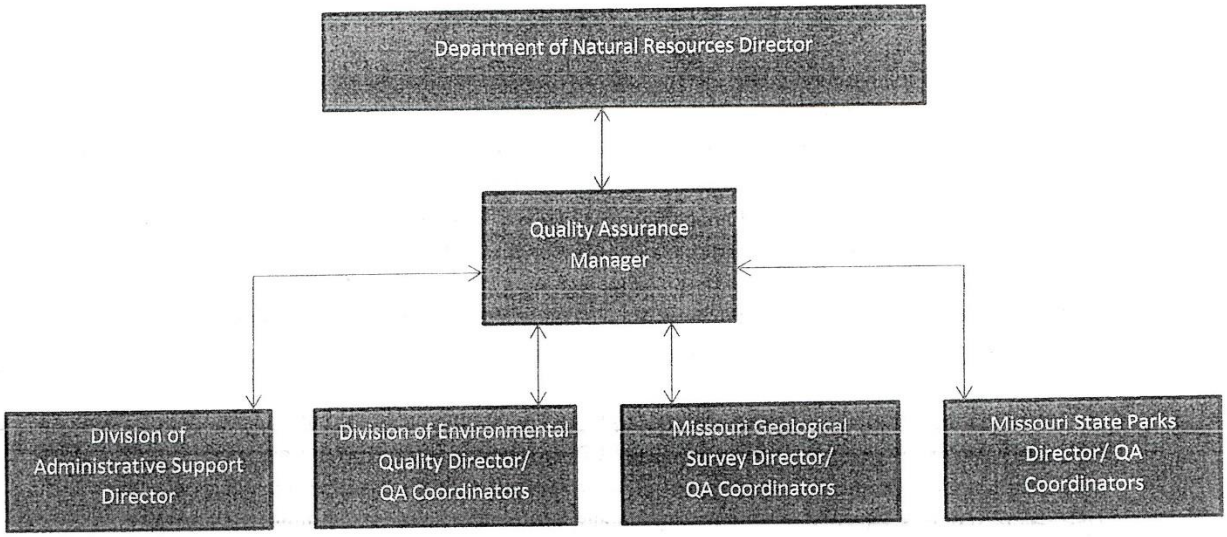
- The intended uses of data and data quality objectives are defined before each data collection effort begins. The Department ensures data quality objectives are met by developing and implementing quality control activities.
- A quality assurance project plan be developed for each data collection effort in accordance with the current EPA requirements (*EPA QA/R-5, March 2001* [reissued May 2006], EPA Requirements for Quality Assurance Project Plans. http://www.epa.gov/quality/qs-docs/r5-final.pdf) and identifies what resources are needed to support the project's quality assurance effort. The Department's project plans, associated project-specific sampling, or data collection plans document the intended

data uses, level of quality, project-specific quality control activities, and data acceptance criteria to meet the data quality objectives.

- Quality data be ensured from external parties by requiring that data received from a sub-grantee, a contractor, a regulated entity or other external party on which the Department makes decisions is supported by appropriate quality management procedures, as described in Section 2.3.
- Data and associated technology tools be managed to provide a foundation for achieving the priorities established through its strategic planning process. In cooperation with the Information Technology Services Division (ITSD), the Department systematically acquires and develops tools to continuously improve the quality of the information upon which natural resource decisions are based.
- Information resources be maintained to ensure that environmental and other natural resource decisions are based on data of a known quality. The Department generates, acquires, and manages environmental data and other natural resource data of a known quality to support agency decisions. The Department develops and documents data quality information for all environmental data and other natural resource data and makes this information available to the EPA, other data users and the public.

1.3 Organizational Chart and Functional Statements

The following chart illustrates the organizational structure of the Department and its divisions. The Quality Assurance (QA) manager reports directly to the division directors; however, the QA manager has independence in all quality assurance matters and may directly and independently interact and communicate with the Department Director. Following is a brief description of the function of each of these divisions.



Organizational charts with additional detail are available on the Department's web site.

Division of Administrative Support

The Division of Administrative Support provides the Department administrative and management support for its current and future operations. This support includes budget development, internal audit, accounting, human resources, procurement, grants management, and facilities management activities.

Division of Environmental Quality

The Division of Environmental Quality helps Missourians prevent pollution; protects the public from exposure to harmful substances, emissions, discharges, and waste disposal practices; and works to improve the quality of air, water, and soil for sustainable use by the public, business, tourism, and agriculture.

Functions of the Environmental Quality programs and regional offices include:

Air Pollution Control Program – responsible for all air quality issues related to acid rain, air quality standards, asbestos removal, construction and operating permits, emissions inventory, emissions testing, gasoline vapor recovery, incineration, non-attainment areas, open burning permits, pollutant modeling, stack testing, toxic air emissions, and other air related issues.

Environmental Services Program – responsibilities include the state environmental laboratory and field staff assigned to environmental emergency response, air monitoring, air quality assurance, water and biological monitoring, landfill groundwater monitoring, and hazardous waste site sampling. The Chemical Analysis Section (CAS) serves as the Department's primary environmental laboratory. The laboratory provides analytical testing and support vital to the Department, which is necessary to

evaluate and make decisions concerning drinking water safety, air and water quality, natural resource protection, and the protection of public health and safety.

Hazardous Waste Program – responsible for oversight of the treatment, storage, disposal and transportation of wastes that are classified as hazardous, petroleum above ground and underground storage tanks, registry of abandoned and uncontrolled sites, state and federal superfund sites, voluntary cleanup of hazardous substances, brownfields, and other hazardous substance related issues.

Soil and Water Conservation Program – responsibilities include providing financial incentives to landowners for implementing conservation practices that help prevent soil erosion and protect water resources. By promoting good farming techniques that help keep soil on the fields and waters clean, the program helps conserve the productivity of Missouri's working lands. The program also manages the nonpoint source management program.

Solid Waste Management Program – responsible for permitting and regulation of landfills and other solid waste processing facilities, enforcement of solid waste violations at permitted facilities and illegal dumps, addressing dumping issues, groundwater and gas monitoring at landfills, solid waste management planning, financial assistance, promoting recycling, waste reduction, and market development, and other solid waste related issues.

Water Protection Program/Public Drinking Water Branch – responsibilities include oversight of backflow prevention, boil orders, construction permits, cross connections, water quality testing and standards, lead contamination, water use (census), wellhead vulnerability assessments, and other related issues of public drinking water systems.

Water Protection Program/Water Pollution Control Branch – responsible for oversight of compliance review, land application, National Pollutant Discharge Elimination System Permits, wastewater pretreatment, storm water permits, water quality standards, animal waste management, and other water quality-related issues.

Regional Offices (Kansas City Regional Office, Northeast Regional Office, Southeast Regional Office, St. Louis Regional Office, Southwest Regional Office and satellite offices) – responsibilities include field inspections, complaint investigations and first-line troubleshooting on environmental issues for air pollution, drinking water, hazardous waste, solid waste, technical assistance, and water pollution. Environmental Emergency Response staff of the Environmental Services Program also operates out of the regional offices. Regional offices supervise activities in a number of satellite offices that conduct similar work within more local areas of operation.

Missouri Geological Survey

The Missouri Geological Survey is responsible for providing technical expertise for geologic and water resource issues and helping people understand, enhance, and protect our surface and subsurface

resources. The division interprets Missouri's geological setting, assesses the availability of Missouri's energy, mineral, and water resources, and ensures protection of groundwater resources.

The functions of the Missouri Geological Survey programs are:

Geological Survey Program – provides geologic and hydrologic support to other environmental programs in the Department, in support of EPA programs, and to the general public. Activities involve sampling of soil, bedrock, gas, and water for chemical, physical or microbial analysis, site characterization, and mineral evaluations. Staff also drill boreholes, install and plug wells, conduct borehole geophysical and video logging, conduct surface geophysical surveys and conduct water traces and spectrofluorometric analyses in characterizing hydrology and geology of waste disposal sites, spill sites, and the state of Missouri in general. They also regulate all well drilling activities in the state, including water wells, monitoring wells, heat pump wells, oil and gas wells, and mineral exploration test holes.

Land Reclamation Program - administers and enforces permitting and reclamation of coal and industrial mineral mines. The program mission is to assure the beneficial restoration of mined lands and to protect public health, safety and the environment from adverse effects of mining within the state. Mines are inspected monthly for indications that mined areas are reclaimed adequately. The program also administers the Metallic Minerals Waste Management Act by issuing permits for and inspecting metallic mineral mine waste disposal areas.

Water Resources Center – responsibilities include administering the development, conservation, and utilization of the state's water resources. The center's primary role is to provide technical advice and assistance on water use, planning, groundwater and surface water hydrology, and it regulates dams to ensure they meet minimum safety requirements. Issues involve interstate water availability and usage; public water well locations; water quality and quantity determinations; drought and flood response and planning; coordination and resolution of river basin issues; major water users data collection; wetlands research, conservation, and protection; groundwater and surface water contamination potential and prevention; water use registration; and the safety of regulated dams.

Missouri State Parks

Missouri State Parks administers Missouri's state parks and historic sites and coordinates statewide programs for outdoor recreation and trails. This division preserves and interprets the state's most outstanding natural landscapes and cultural landmarks and provides recreational opportunities compatible with those resources.

1.4 Applicability

This quality management plan applies to all offices within the Department and environmental data and other natural resource data requested, collected, and managed by the Department. This plan also applies to the Department's collection of environmental data and other natural resource data at the request of other agencies, such as the State Emergency Management Agency, Missouri Department of

Agriculture, U.S. Fish and Wildlife Service, Missouri Department of Conservation, the U.S. Natural Resources Conservation Service, and the U.S. Geological Survey.

1.5 Roles

Quality Assurance Manager

The Department Director has delegated the responsibility and authority to implement the Department's quality management plan to the QA manager. The QA manager reports to Program and Division Management; however, the QA manager has independence in all quality assurance matters and may directly and independently interact and communicate with the Department Director and division directors. This direct access to the Department Director allows the QA manager to independently elevate critical quality-related issues at the manager's discretion without approval or pre-notification. The QA manager is responsible for ensuring data quality by developing and documenting Department policies, procedures, and guidance; coordinating periodic revisions to the quality management plan; coordinating quality assurance training to Department staff; reviewing quality assurance project plans; supporting and advising staff in other quality assurance roles; and resolving elevated quality assurance issues.

Division Director Staff

Division director staff ensures quality data by advising the Department's QA manager and providing administration of all Department quality assurance activities. The Department's divisions are listed in Section 1.3, above.

Information Technology and Process Improvement Policy Director

The Department's Information Technology and Process Improvement Policy Director ensures quality data by guiding the Department's use of technology in the collection, storage, processing, and distribution of information. This position also establishes Department policy regarding information technology hardware purchases, software purchases, application development, application maintenance and enhancement, content storage, and geospatial data management. Other duties include collaborating with the Department's stakeholders, including the ITSD, other state agencies, federal agencies, and state associations to develop and maintain the best possible information technology system to support the Department's natural resources protection efforts.

Program/Office Director

A program/office director (e.g., environmental program director, regional office director) has overall responsibility for implementing all quality assurance requirements within their program/office. Quality data is supported by continuing education and training of staff about quality assurance and quality control; ensuring staff comply with the Department's quality assurance policies, processes, and procedures; assigning staff to quality assurance roles; committing adequate resources to the quality system; and evaluating the effectiveness of the quality system.

Quality Assurance Project Plan Coordinator

A QA project plan coordinator is responsible for coordinating the planning and development of quality assurance project plans for environmental data and other natural resource data collection projects and associated work plans. This position ensures quality data by coordinating the timely completion of these plans to support field and laboratory staff planning.

Quality Assurance Coordinator

A QA coordinator serves as the main point of contact for all quality assurance issues within a program/office. Each program/office, which generates or manages environmental data and other natural resource data, should have at least one QA coordinator. A QA coordinator ensures quality data by supervising development of data quality objectives and quality assurance project plans in their program/office. QA coordinators also assist the QA manager with revisions to the Quality Management Plan.

Quality Assurance Project Officer

A QA project officer is responsible for coordinating the planning and development of quality assurance project plans and ensuring all quality assurance requirements of the quality assurance project plans are met. They are responsible for timely completion of these plans to support planning activities of field and laboratory staff, and they ensure quality data by establishing clear data quality objectives and supervising project activities to achieve those objectives. Their duties may also include identifying and evaluating data from external sources for use in a project and managing data collection under the quality assurance project plan.

Laboratory Manager

The laboratory manager supervises all chemical analysis and data management for the Environmental Services Program. The laboratory manager implements established procedures to validate and verify analytical results. Quality data is supported by maintaining a broad understanding of the quality system; ensuring staff comply with the Department's quality assurance policies, processes, and procedures; assigning staff to quality assurance roles; establishing procedures to validate and verify analytical results; ensuring staff have appropriate training to implement the quality system; committing adequate resources to the quality system; and evaluating the effectiveness of the quality system.

Analyst

An analyst performs qualitative and quantitative analysis of drinking water, wastewater, soils, sludges, sediments, industrial wastes, air, and other matrices or matter to identify and confirm various contaminants, both natural and man-made. These contaminants include inorganic analytes, organic compounds, synthetic organic compounds, heavy metals, and biological contaminants, all of which may affect health, water quality, and natural resources. The analyst ensures quality data by completing and verifying all required quality control procedures to document the validity and quality of all sample test results. In addition, the analyst also provides the data necessary to evaluate and make natural resource decisions.

Field Staff

Field staff conduct field operations in support of natural resource protection and enhancement. While in the field, they may collect a variety of samples and field data (e.g. notes, diagrams, analytical data, and photographs). The field staff's findings may be documented in a field notebook, report, or other means. To ensure data quality, field staff collect and process data following the Department's established policies, guidance documents, and standard procedures.

1.6 Technical Activities or Programs Supported by the Quality System

The Department implements the quality system described in this document to support its programs that address:

- Air Quality
- Public Drinking Water
- Water Quality
- Water Resources
- Geology
- Solid & Hazardous Wastes
- Toxic Substances
- Radiation
- Risk Assessment
- Land Use/Reuse
- Long-Term Stewardship

Occasionally, the Department may collect environmental data or natural resource data in support of the Land Reclamation Program within the Missouri Geological Survey, the Missouri State Parks, or other agencies, such as the State Emergency Management Agency, Missouri Department of Agriculture, U.S. Fish and Wildlife Service, Missouri Department of Conservation, the U.S. Natural Resources Conservation Service, or U.S. Geological Survey. In these cases, the Department collects the data to support the environmental and natural resource statutory authority of one or more of the programs identified above.

1.7 Quality Management Plan Distribution and Training

The Department makes this quality management plan available to all staff by placing an electronic copy of the document on its Intranet web site. Each program or office is responsible for maintaining familiarity with the requirements of the quality management plan. Staff who sign quality assurance project plans (e.g., quality assurance project plan coordinator, quality assurance coordinator, quality assurance project officer, laboratory manager, etc.) must fully understand the requirements of this quality management plan.

In cooperation with the EPA, the Department occasionally provides quality assurance training for staff. The Department may also provide agency-specific quality assurance training or provide limited training to contractors and sub-grantees that provide data to the Department.

1.8 Dispute Resolution

For those situations in which technical issues or management issues regarding quality assurance are in dispute, all parties should make every effort to resolve disputes through discussion and negotiation. Resolution should be sought at the lowest practicable management level. Should agreement not be reached at this level, the issue will be resolved by the senior management team, consisting of affected program directors and division directors. The Department Director or designee has final dispute resolution authority on all Department quality assurance issues.

2. Quality System Description

2.1 Quality Management Plan

The Department maintains this quality management plan to describe the management policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan for ensuring quality in the Department's environmental data and other natural resource data. It covers all intramural and extramural monitoring and measurement activities that generate and process environmental data and other natural resource data for use by the Department. The plan is written according to an EPA document titled *EPA Requirements for Quality Management Plans*.

The QA manager and QA coordinators review the quality management plan annually and revise the document as needed. The Department presents the quality management plan for EPA review and approval on a five-year cycle.

2.2 Data Quality Objective

The Department defines the intended use of data prior to beginning a data collection project. The data quality objectives process is used for all new data collection efforts. The Department implements the data quality objectives process based on an EPA document titled *Guidance on Systematic Planning Using the Data Quality Objectives Process*. In large part, the needed data quality determines the extent of the data quality objectives process. However, the Department uses the basic elements of the data quality objectives process for all data collection efforts.

2.3 Quality Assurance Project Plan

A quality assurance project plan documents the data quality objectives process, and describes how quality assurance and quality control are applied to an environmental data or other natural resource data operation to assure that the data obtained is of the type, quantity and quality needed to support agency decisions. EPA-funded environmental data activities require that the Department generate data only after approving a quality assurance project plan.

A QA project officer is responsible for coordinating the planning and development of each quality assurance project plan.

The quality assurance project plan describes in detail the necessary quality assurance, quality control, and other technical activities that must be implemented to ensure that the results of the work performed will meet the stated performance criteria.

The plan is divided into four groups: project management, data generation and acquisition, assessment and oversight, and data validation and usability. Project management elements address project history, project objectives, the roles and responsibilities of project participants, and other project management information. They ensure the project has a defined goal, the participants understand the goal and the approach to be used, and the planning outputs have been documented. Data generation and acquisition elements address project design and implementation. They ensure the Department uses and documents appropriate methods for sampling, measurement and analysis, data collection or generation, data handling, and quality control activities. Assessment and oversight elements address the activities for assessing the effectiveness of the project and its quality assurance and quality control activities. The assessment is meant to ensure that the quality assurance project plan is implemented as written. Data validation and usability elements address the quality assurance activities that occur after the data collection or generation phase of the project is completed. These elements ensure the data conform to the specified criteria, and therefore achieve the project objectives.

The Department requires a quality assurance project plan for all environmental data or other natural resource data collection efforts. The quality assurance project plan is prepared according to the current versions of EPA documents titled *EPA Requirements for Quality Assurance Project Plans, Guidance for Quality Assurance Project Plans,* and *Guidance for Quality Assurance Project Plans for Modeling.*

Quality Assurance Project Plan Review, Approval and Dissemination Process

Quality Assurance Project Plans for Data Collection by the Department

The program or office that is responsible for initiating the collection of environmental data or natural resource data will coordinate development of the QAPP and assign a QA project officer to this responsibility. The QA manager, the laboratory and field personnel within the Environmental Services Program and the QA coordinators are available to provide assistance to the assigned QA project officer. In some circumstances, laboratory or field personnel within the Environmental Services Program may draft or revise the QAPP. The draft quality assurance project plan is normally reviewed internally within the initiating program or office by the QA project officer's supervisor and by that program or office's QA coordinator. If the Environmental Services Program analyzes samples or conducts other work on the project, the document is reviewed by the staff in that program. Finally, the QA manager is responsible for reviewing and approving the document.

Once the quality assurance project plan has been finalized, the approval and signature process occurs in the following order; the QA project officer, the QA coordinator; the director of the initiating program or office; the Director of the Environmental Services Program, if it will analyze samples or conduct other work on the project; and the QA manager. Copies of each final quality assurance project plan will be

available in paper or electronically to each signatory and each staff member involved in collection or management of the project's environmental data. The QA project officer will review the quality assurance project plan annually and make revisions, as needed. At a minimum, the Department will revise and formally approve each quality assurance project plan every five years.

Quality Assurance Project Plans Where the Data Collection Occurs Externally

When the environmental data or natural resource data is collected by an external organization (e.g. contractors, subgrantees, owners and operators of permitted facilities, etc.), the Department implements a similar review and approval process. However, a representative of the external organization serves as the QA project officer. The program that will use the environmental data or natural resource data is responsible for ensuring that the quality assurance project plan is prepared in accordance with EPA Requirements for Quality Assurance Project Plans and EPA Guidance for Quality Assurance Project Plans. When the Department uses externally generated data, the program will require the external organization to use an accredited laboratory or submit documentation to the program's QA coordinator or the project officer designee to support subsequent data quality assessments for Department approval. The QA coordinator or a designee will review and approve the external quality assurance project plan. The QA manager, Environmental Services Program representatives, and the program QA coordinators will be available to provide assistance in reviewing the draft quality assurance project plan. Copies of each final quality assurance project plan will be available in paper or electronically to each signatory and each staff member involved in collection or management of the project's environmental data.

Because of resource constraints and to facilitate the Brownfields process, the EPA may request assistance from Missouri for the review and approval of quality assurance project plans for non-state EPA grantees. The EPA has authorized the state program to review and approve quality assurance project plans in lieu of the Regional QA manager. Review and approval of non-state EPA Brownfields grantee quality assurance project plans by a state program will be limited to those instances where there is mutual agreement among the parties involved (the state, EPA Region VII, and the grantee), and a relationship has been established between the state program and the non-state EPA grantee following the guidelines established by the state for its Brownfields program. The request for such assistance will be made through the EPA project officer in consultation with the Regional QA manager, as necessary. Oversight of the state's quality assurance project plan approval process for Brownfields will be part of the management system reviews process as described in section 11.2.1.2 of EPA's quality management plan. For Brownfields projects, once the quality assurance project plan has been finalized, the approval and signature process occurs in the following order: the QA project officer from the external party, who will be responsible for the data collection; the Department's project officer; the Director of the Hazardous Waste Program; and finally by the QA manager. Copies of each final quality assurance project plan will be available in paper or electronically to each signatory, as well as to each staff member, involved in collection or management of the project's environmental data.

Certification and Approval of Quality Assurance Project Plans

With the approval of this quality management plan, the EPA provides approval to the Department to certify and approve all quality assurance project plans, both internal and external, with the exception of quality assurance project plans developed in support of a Superfund Cooperative Agreement. When the environmental data is to be collected in support of a Superfund Cooperative Agreement, the quality assurance project plan will be developed and submitted to the EPA for approval in accordance with 40 CFR Part 35, Subpart O. Copies of the quality assurance project plans for federally funded activities will be available for inspection as part of the EPA's on-site program evaluation activities or upon request.

2.4 Sampling Plan

When a generic quality assurance project plan is followed, the Department prepares a sampling plan for the specific environmental data or other natural resource data collection effort. The sampling plan serves as an addendum to the quality assurance project plan and identifies the project-specific data quality objectives and quality control criteria that are different from those specified in the quality assurance project plan or provide more specific details. For anticipated samples, the sampling plan specifies the locations, frequency, and the analyses to be performed.

If the site-sampling plan is prepared by someone other than the QA project officer, the QA project officer will be responsible for reviewing and providing final approval. If the Sampling Plan is prepared by the QA project officer, staff in the office that collects the samples will review and provide comments on the plan and the QA project officer's supervisor or the programs QA coordinator is responsible for reviewing and providing final approval.

2.5 Standard Operating Procedure

The Department uses standard operating procedures (SOPs) to ensure quality environmental data by maintaining standard, consistent administrative and technical activities. The Department references these SOPs in quality assurance project plans to maintain known data quality on each project.

The SOPs are prepared utilizing the EPA document titled *Guidance for Preparing Standard Operating Procedures (SOPs)-QA/G-6 -(EPA/600/B-07/001)*. EPA QA/G-6 is designed to provide guidance in the preparation and use of an SOP within a quality system. SOPs are developed and implemented for environmental data collection, data operations, and technologies. Environmental data includes information collected directly from measurements, produced from models, and compiled from other sources such as databases or literature. Environmental technology includes pollution monitoring, measurement and control devices and systems, waste treatment processes and storage facilities, and site remediation technologies and their components that may be utilized to remove pollutants or contaminants from/or prevent them from entering the environment.

Programs are responsible for assigning a QA coordinator to facilitate SOP development and revisions. The author, or another person familiar with the procedure, typically reviews existing SOPs on a

scheduled interval basis, although SOPs may be revised any time there is a change in the procedure. Updates and changes are documented and dated.

New and revised SOPs undergo a peer review. Following a peer review, the SOPs are reviewed and approved by a supervisor, or designated QA coordinators. Program directors are responsible for maintaining the complete and up-to-date set of SOPs. The most current technical SOPs are posted on the Department's Intranet site, replacing any previous versions.

2.6 Management Systems Reviews

Quality System Review and Audit

Several activities are necessary to ensure the Department's quality system is effective and is achieving the goals outlined in this quality management plan. These activities include management systems reviews, technical system audits (see Section 10), performance evaluations, internal and external audits, peer reviews, and the quality assurance project plan review and approval process.

Review of the Quality System and Quality Assurance Project Plans:

QA coordinators are responsible for conducting internal audits, management systems reviews, and technical system audits in their respective programs and reporting findings to the QA manager. This function may be limited by staff training and capacity, and may as an alternative rely on EPA oversight through audits. The QA manager makes recommendations for corrections or modifications to address identified problems. Each QA project officer and manager ensures thorough review of all internal and external quality assurance project plans and sampling and analysis plans associated with environmental data and natural resource data collection activities. These audits and reviews ensure that acceptable quality assurance and quality control activities and requirements are included, that data quality objectives are established prior to the project's inception, and that the project will be able to produce data of the type, quantity, and quality desired in a documented and cost-effective manner.

External Data Quality Reviews and Performance Audits:

Effective implementation of the Department's quality system requires periodic external management systems reviews and performance audits to assess its effectiveness. The results of these reviews and audits will be used to revise the quality management plan, as appropriate.

2.7 Training

All personnel performing tasks and functions related to data collection will possess adequate education, training, and experience to satisfactorily perform all technical tasks assigned. The programs incorporate these education and training requirements into the position description forms and performance documents for each individual position. These documents define the level of expertise necessary for the particular staff position. The programs will develop and maintain annual training plans for staff responsible for data collection. The training plans will define the training courses necessary for each staff member to attain or maintain expertise needed to perform certain tasks associated with the

position (e.g. training for field staff involved in sample collection, chemists who conduct the analyses, etc.).

To the extent practicable, recognizing limitations on training availability, budget constraints and staff turnover, all personnel involved in quality assurance work should receive appropriate training for their specific roles.

All personnel involved in quality assurance and quality control, or primary or secondary data use should complete the EPA course, Orientation to Quality Assurance, or its equivalent.

In addition to the above training, all personnel serving to review and approve quality assurance documents or serving as primary data users should complete the EPA courses; Introduction to Data Quality Objectives, Introduction to Quality Assurance Project Plans, and Introduction to Data Quality Assessment or their equivalents.

The QA manager, the QA project plan coordinator, QA coordinators and designees who approve external quality assurance project plans should complete the EPA course, Introduction to EPA Quality System Requirements.

The planning and accomplishment of this training will be included in performance planning and appraisal documents or training logs maintained by the programs. The Department's quality assurance staff may assist in providing training for Department staff, recognizing that the EPA may remain the primary source of training and that the EPA provides appropriate modules for quality assurance training.

The Department has been an active participant in the EPA quality assurance and quality control training programs offered through EPA Region VII. The Department has encouraged both its line staff and managers to attend the training program. The EPA Regional QA manager will advise the Department QA manager of available quality assurance training opportunities for the Department's staff. The effectiveness of quality assurance training received by staff will be evaluated through internal and external assessments, evaluations, audits, and other means.

3. Competence

Hiring Practices

The Office of Administration establishes job classifications and eligibility requirements for nearly all positions at the Department. The Missouri Merit System provides a standardized, competitive selection process for recruitment and retention of a qualified workforce. The Office of Administration Division of Personnel maintains the approved individual position descriptions to ensure that the education and experience requirements meet the specifications of each job classification.

Performance Planning and Assessment

The Department closely monitors each newly hired staff member through a probationary period to evaluate his or her performance. Thereafter, each supervisor conducts annual performance evaluations for each staff member, based on the objectives which describe the essential duties of each position relative to the knowledge and competencies required for that position.

Training Plans

The Department addresses training as part of the annual performance evaluations and planning for individual staff. For staff that collects environmental data and other natural resource data through field observations, sample collection, sample analysis, or other means, the supervisor ensures quality data by including appropriate courses in the staff member's training plan. For staff who serve in a quality assurance role, the supervisor ensures quality data by including courses that are appropriate for that role. Throughout the year, the supervisor ensures that the training plan is followed.

Field Office Training

The Department maintains an on-line training portal for field staff. The portal contains both general and technical information to encourage consistency in field activities. The Department also maintains Procedures for Assistance, Compliance, and Enforcement manual to provide guidance for performing field activities and documentation.

Managers and experienced staff in field offices provide on-the-job training to new staff. This training familiarizes new employees with the Department's policies and procedures. It also familiarizes them with Missouri's statutory and regulatory requirements for the area in which they work. Managers also direct staff to training appropriate for their position.

The Department organizes periodic meetings between programmatic offices and field staff. These meetings reinforce the policies, guidance, and procedures of the Department.

Certification

Some quality assurance roles within the Department require third-party certification to perform a needed quality assurance function. The Department may enter into cooperative or other agreements with EPA or other federal agencies, which require that certain staff have certifications to perform particular quality assurance or sampling activities. Where these certifications are required, the respective program identifies these requirements in the applicable Quality Assurance Project Plan.

Documentation

The Department maintains the Competency Employee Record Tracking System to record the training and continued education of staff. The Department also tracks training of individual staff through the annual performance evaluation process.

4. Equipment and Supplies

Procurement

The Office of Administration is responsible for procurement and maintains state purchasing regulations, specifications and procedures, which ensure the quality of contracted activities. Department staff requesting the service provides input and are normally part of the bid evaluation team to ensure that the contract awarded meets the quality needed. The Office of Administration is responsible for ensuring the contractor meets the terms and conditions of the contract. The Department adheres to both the state and internal procurement procedures, which include review and approval by supervisory staff of all purchases for field equipment and supplies.

Operation

The Department operates field equipment and analytical equipment according to the owner's manual and other documentation provided by the manufacturer. If the Department has adopted an SOP for the equipment, staff will implement these procedures to ensure consistent quality.

5. Collection of Information

Field Observations

The Department documents its field activities through field notes, diagrams, reports, photographs, etc. The Department provides the Procedures for Assistance, Compliance, and Enforcement manual to field staff to guide field activities, including the collection of field information and other documentation of the field activities. To ensure the quality and consistency of information collected in the field, the Department maintains SOPs for collection and documentation of field observations.

Analytical Data

The Department analyzes field samples to support natural resource decisions. This includes decisions by the Department and other data users.

Samples are collected by field staff or by remote sampling equipment and handled according to established SOPs to ensure the quality and consistency of the resulting analytical data. Whether the analysis is conducted in the field or in the Department's laboratory, the Department operates analytical equipment according to the owner's manual and other documentation provided by the manufacturer. In cases where the Clean Water Act, Safe Drinking Water Act or other legislation require specific analytical procedures, including Standard Methods, these requirements must be met, regardless of manufacturer's documentation. If the Department has adopted an SOP for the equipment, staff follows this additional documentation to ensure consistent quality.

Information Provided to the Department According to Statute, Regulation, or Permit

Missouri statutes, Missouri regulations, federal regulations, and the conditions included in permits require that regulated entities provide a variety of information to the Department. The Department

reviews these submittals to ensure that the quality is consistent with the requirements of the statute, regulation or permit condition.

Other Information from External Sources

The Department uses information from external sources to make decisions. For contracts, sub-grants or agreements, which involve the collection of environmental data and other natural resource data, the Department ensures that the contract, sub-grant, or agreement addresses appropriate quality assurance requirements. To the extent possible, Department staff engages with external information sources to ensure they produce quality data. When the Department contracts for the collection of data to support agency decisions, the Department assures that the data collection is completed according to an approved quality assurance project plan.

When the Department enters contracts for services, subgrants or agreements, which involve the collection of environmental data or natural resource data, it ensures that all appropriate quality assurance requirements are met and documented. The varied responsibilities of the Department necessitate the use of data acquired by the Department that was independently managed, collected, and analyzed. To the extent possible, the Department will involve itself in these activities so that these external sources produce quality data. It is the goal of the Department that all environmental data and natural resource data used by the Department, including acquired data, is scientifically defensible.

External Quality Assurance Project Plans

External parties that generate data and report it to the Department will prepare quality assurance project plans before generating the data and will provide the quality assurance project plans to the Department for approval, except where noted below. The Department can develop standardized or generic quality assurance project plans for certain types of external activities that generate data. For example:

- Voluntary cleanup projects or projects conducted under risk-based corrective action procedures.
- Tank site cleanups conducted under Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks.
- Permitted wastewater treatment plants routine compliance monitoring data.
- Public water system compliance monitoring data analyzed at a certified drinking water laboratory.
- Miscellaneous data acquired by the Department that can be classified for specific uses, according to its age, quantity, accuracy, precision, completeness, representativeness, or comparability.
- Ambient air monitoring projects conducted by industrial sources.

6. Documentation and Records

The Department maintains documentation of its quality system to ensure that users of our environmental data and other natural resource data can determine its data quality.

The Department takes precautions during the reduction, manipulation, and storage of data to prevent errors and data loss in accordance with approved SOPs.

The Department maintains several databases to store and manage information about analytical data. Some of these information technology applications generate reports and other documentation of the quality system. A Laboratory Information Management System maintains information and data on all environmental samples received and analyzed at the Environmental Services Program laboratory. The system is used to log in samples collected, record results of analyses, and generate sample analyses and management reports.

The Department maintains and follows a policy for the retention of its records, including electronic records. Quality assurance records are maintained according to the State's General Retention Schedule, Administrative Operations, Series 21512/Policy and Planning Records (page 10). The Missouri Secretary of State requires state agencies to obtain the permission of the state archivist before the disposal of public records. This permission is given through authorized Retention and Disposal Schedules, which identify temporary records and records of permanent retention value. The QA manager identifies all quality assurance and quality control documents listed in the Department's records disposition schedule. The Department will implement the current agency records disposition schedule approved by the Secretary of State's Office for all quality assurance and quality control documents and records of environmental data and other natural resource data. All documents placed into one of the Department's physical file rooms or into one of the Department's digital content management systems must be addressed in the Retention and Disposal Schedules. Raw data and sample media retention may have project specific archiving requirements. These project specific requirements are documented in the respective quality assurance project plan.

The Department's custodian of records is responsible for the maintenance of records. Each QA coordinator maintains awareness of record requirements and ensures that each project officer maintains the records needed for the quality assurance project plan. Information to maintain includes but is not limited to significant quality assurance problems, corrective actions, corrective action progress plans, and recommendations. The QA coordinator provides this information to the QA manager, as needed.

The Environmental Services Program retains hard copy documents for two years before storing them at the Missouri State Data Center, where the documents will be retained for 25 years. Chain-of-custody documents are maintained in hardcopy.

Imaged copies of laboratory analysis reports, chain-of-custody documents, and performance testing sample analysis results will be made and maintained using the OnBase document imaging system on an in-house application server. The Laboratory Information Management system data is also maintained on this server. Back up is accomplished through the backup system on a nightly basis. All active files and previous versions of active files from the server hosting the images and Laboratory Information

Management system data are maintained off site and restorable within minutes. Individual instrument computers are linked on the private network inaccessible to outside networks. This allows the instrument raw data to be copied to the application server to be backed up along with the other files. Access to the instrument computers and private network is restricted to authorized personnel by magnetic badge security.

The development and maintenance of state quality assurance programs will also be included in the annual discussions between Department management and the EPA during the Performance Partnership Agreement process.

7. Computer Hardware and Software

This section describes how the Department manages the computer hardware and software used to support environmental programs and operations. It also describes the roles and responsibilities assigned to management and their staff.

- How Hardware is Evaluated to Ensure That it is Appropriate For The Intended Application – Hardware purchases are made through a partnership of Department end users' evaluation of their needs and hardware options with the input from the ITSD. ITSD staffs are data processing professionals who develop the annual computer hardware purchasing plans for the programs in the division. Additional levels of review are provided, as needed, by each division's IT Liaison within the Department and Senior IT Services Division staff assigned to the Department.
- How Hardware Changes Are Controlled to Reduce Performance Impact - The Department's executive staff approved a policy entitled Minimum Computer Configurations. This policy specifies minimum standards for desktop and laptop hardware and software. The recommended configurations are periodically reviewed by ITSD staff to determine if the Department should upgrade the minimum configuration. The Department's IT Liaison review process also helps to ensure that purchases meet or exceed this policy.
- How Software Developed by ITSD is Evaluated to Meet User Requirements - The ability of software developed in-house to meet user needs is based on two sources of input. First, users are asked to help develop the original specifications for their application. Secondly, users submit requests for additional features or problem corrections that are tracked in databases assigned to each major application. Users are also asked to help determine the order in which new features are added and problems should be prioritized for resolution.
- How Purchased Software is Evaluated to Meet Department Standards – The Department's executive staff approved a policy entitled Software Standards. This policy describes how the Department's standard software is evaluated and selected. The ITSD staff assigned to the Department is responsible for maintaining a current list of standard software. This software standard is periodically reviewed by the ITSD to determine if it is in the interest of the Department to continue to use and support particular software or to add software to the list.